Mojave Water Agency

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Department of Water Resources
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Upon review of the two draft CASGEM documents, our comments are as follows:

Procedures for Monitoring Entity Reporting

Page 18

- Required Local Well Designator identification name…
    - Comment – Allow the State Well Number to be used as the unique well name. The Mojave Water Agency (MWA) database uses State Well Numbers as the unique identifier. Where duplicate well numbers exist, a new number is assigned to remedy the issue. Developing new unique identifiers that must be created/maintained for the MWA's 400+ monitoring wells is burdensome and unnecessary as the "Recommended" solution is already in place and working.

Page 19

- Required/Optional No measurement code (required if depth to water is null; must be null if depth to water is not null)
    - Can this requirement be clarified with an example?

DWR Groundwater Elevation Monitoring Guidelines

Page 2

Various sources were cited in regards to the appropriate minimum number of wells needed to monitor a groundwater basin and were summarized in Table 2 of the document:

Program and(or) Reference	Water-level or Water-quality program	Density of monitoring wells (wells per 100 mi^2)	Minimum number of monitoring wells
Heath (1976)	Water level	0.2 – 10	--
Sophocleous (1983)	Water level	6.3	--
Hopkins (1994) (a) Counties with >100 TAF/yr groundwater pumping	Water level	4.0	--
(b) Counties with 10-100 TAF/yr groundwater pumping	Water level	2.0	--
(c) Counties with 2.5-10 TAF/yr groundwater pumping	Water level	1.0	--
(d) Counties with 1.0-2.5 TAF/yr groundwater pumping	Water level	0.7	--
NAWQA (Gilliom and others, 1995) (a) Study-unit survey	Water quality	>2.8	20
(b) Land-use survey	Water quality	<260	20
GAMA (Belitz and others, 2003) (a) Priority basins	Water quality	10.4	20
(b) Low-use basins	Water quality	2.8	1

What is not addressed in the document or any other DWR guidance documents regarding SBX7-6 are groundwater basins that are not utilized in any material way, fall outside of State jurisdiction and fall outside the purview of any groundwater management entity. According to SBX7-6:

- "… all groundwater basins and subbasins be regularly and systematically monitored locally….". SBX7-6 further states "If the Department determines… that there is insufficient interest in establishing a (monitoring program)… the Department shall do all of the following:"
    - "Monitor the basin/subbasin for which no monitoring entity has agreed to perform the groundwater monitoring functions"
    - "If the Department is required to perform groundwater monitoring….the **county** (and other entities within the county) **shall not be eligible for water grant or loan award**…"

Across the state, many counties have passed responsibility of groundwater management to local groundwater management entities and many have little to no stake in the management of groundwater resources. This is presumed not out of indifference but rather leaving water management to capable resource management entities that have a history of effectively managing the resources of population centers and materially utilized groundwater basins. Population centers, utilized groundwater basins, resource management entities and county borders do not occupy the same area of the state and it is reasonable to assume that some groundwater basins have little to no monitoring taking place. It is also reasonable to assume that a vast number of these unmonitored basins lie in geographically isolated areas of the State with little to no population. Therefore, it is unreasonable for local management entities who have been working with the State for decades on managing their groundwater resources (e.g. Integrated Regional Water Management Plans) to be responsible to bear the burden of monitoring basins that are isolated from their management area with little to no population. This lack of monitoring results in a loss of all State funding opportunities because the county the entity lies within is not monitoring an isolated and unpopulated basin. The attached figures graphically show examples some of the challenges discussed above.

Figure 1 – San Bernardino County, 91 groundwater basins, 20,000 square miles.

Figure 2 – Association of California Water Agencies (ACWA) member boundaries inside of San Bernardino County, ACWA members occupy approximately a quarter of the 20,000 square mile county.

Figure 3 – Population distribution by Census Block Group for San Bernardino County, note majority of population is less than 50 persons per square mile (<1 person per 12.8 acres).

Figure 4 – ACWA members over San Bernardino County with less than 50 persons per square mile excluded (white area).

Figure 5 – Same as Figure 4 with Federal entities included (excluded from SBX7-6).

Figure 6 – Same as Figure 5 showing groundwater basins.

Figure 7 – San Bernardino County and Mojave Water Agency (MWA) boundaries.

Figure 8 – Groundwater basins that lie within MWA boundaries.

Figure 9 – Same as Figure 8 showing MWA monitoring program locations. Groundwater basins not monitored by MWA shown in red hatched areas.

Figure 10 – Same as Figure 9 with all census block groups with population less than 5 persons per square mile (<1 person per 128 acres) greyed out.

The attached figures show that many basins in the county are virtually uninhabited and therefore can be reasonably concluded that little groundwater change is taking place. The attached figures are an example of a county that is unlikely unique to the state. In the figures, many of the basins are not physically monitored but, in essence, the potential change to native groundwater resources have been monitored by quantifying potential anthropogenic (manmade) stresses to the groundwater basin. Until the potential stresses to the basin exist, the basin remains in a static state.

Based on the above, it is recommended that the DWR consider the following:

- Groundwater basins with no material population or heavy agricultural/industrial use be considered Low Priority by the Department and be monitored by change in land use rather than physical monitoring.
    - Monitoring criteria – statistical review of census data to determine if land use has materially changed (every 5 to 10 years).
    - Aerial photo review to determine if agricultural/large industrial land use has materially changed (every 5 to 10 years).
    - Review/tracking of new DWR Well Drillers Reports in little used groundwater basins to track material land use changes (every 5 years).
- Develop guidance as to what is required for monitoring in areas that are outside of State jurisdiction (i.e. Federal owned lands).

In conclusion, the spirit of SBX7-6 is commendable and is a goal that should be pursued in an earnest and prudent manner. If some reasonable qualitative methods of monitoring (e.g. population and land use tracking) exist for basins deemed to be a low priority, it would be conceivable for local entities to coordinate amongst themselves to provide the DWR with reasonable assessments of groundwater use in areas where little data exists, even if these basins fall outside a water management entity's boundaries.

Sincerely,

Mojave Water Agency

Lance Eckhart, PG, CHG, REA
Principal Hydrogeologist

91 Groundwater Basins in San Bernardino County

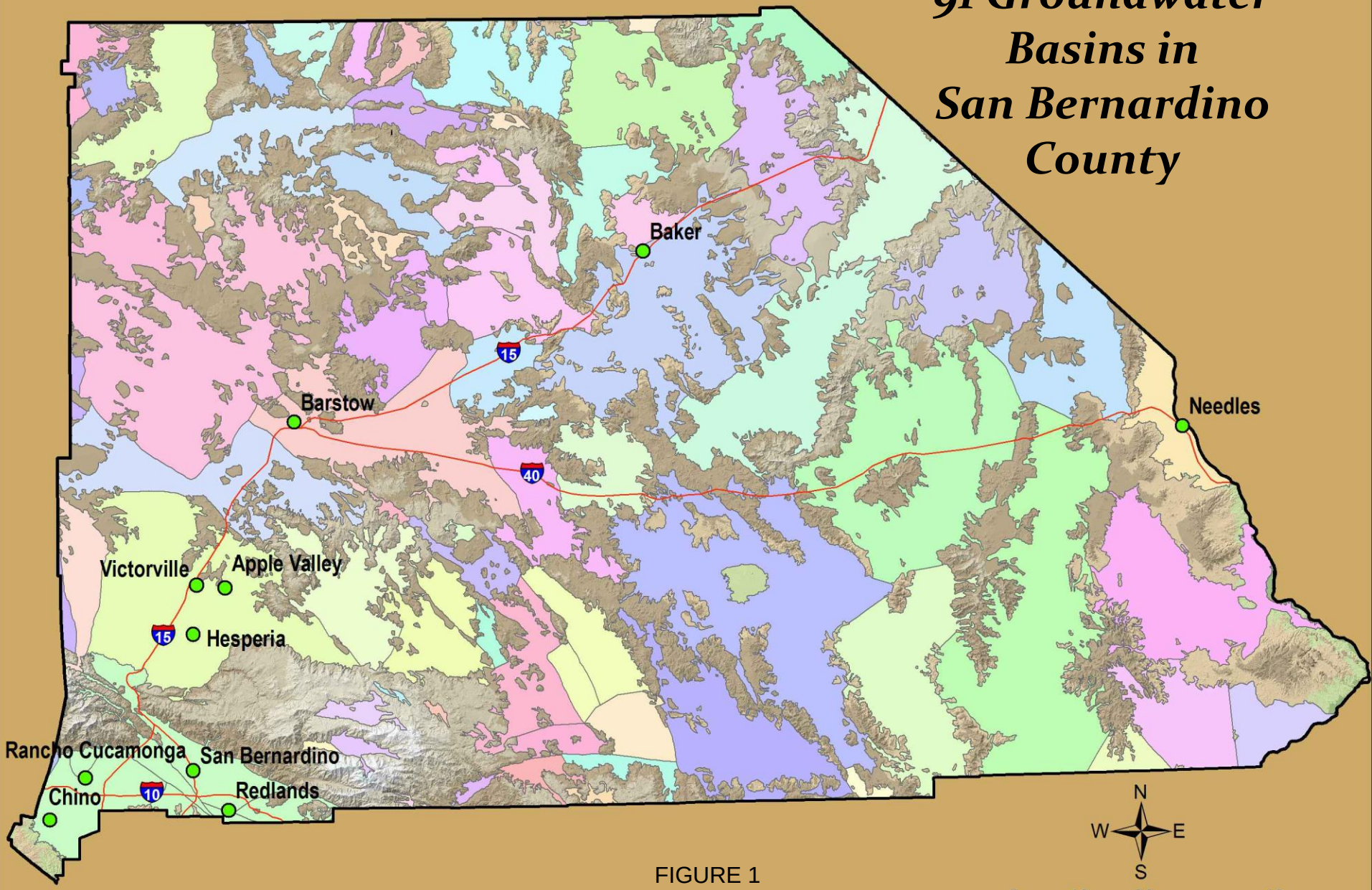

FIGURE 1

ACWA Member Agencies in San Bernardino County

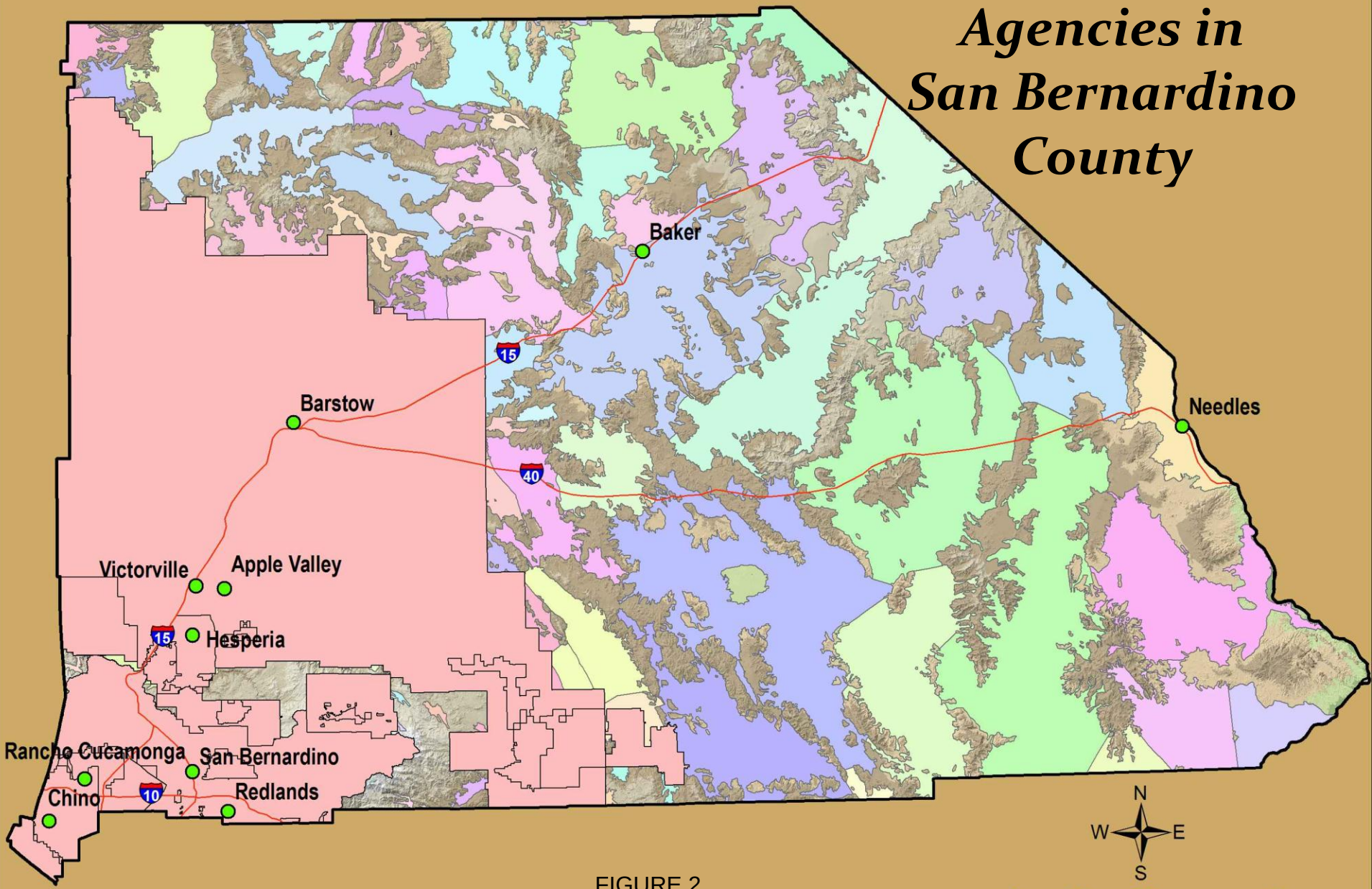

FIGURE 2

Population Centers in San Bernardino County (by Census Block Group)

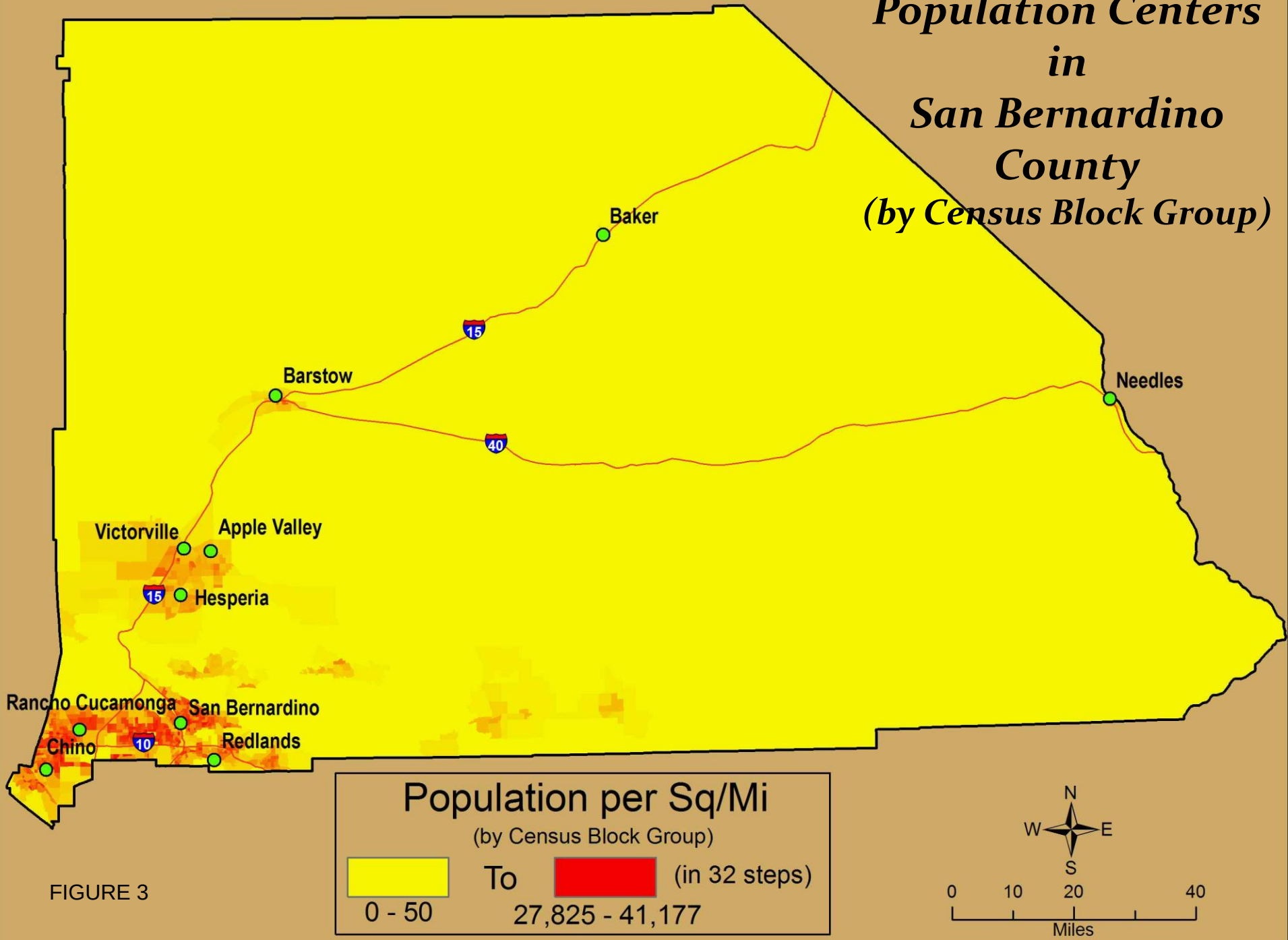

FIGURE 3

Population Centers in San Bernardino County Density of less than 50 People per Sq/Mi Excluded

(by Census Block Group)

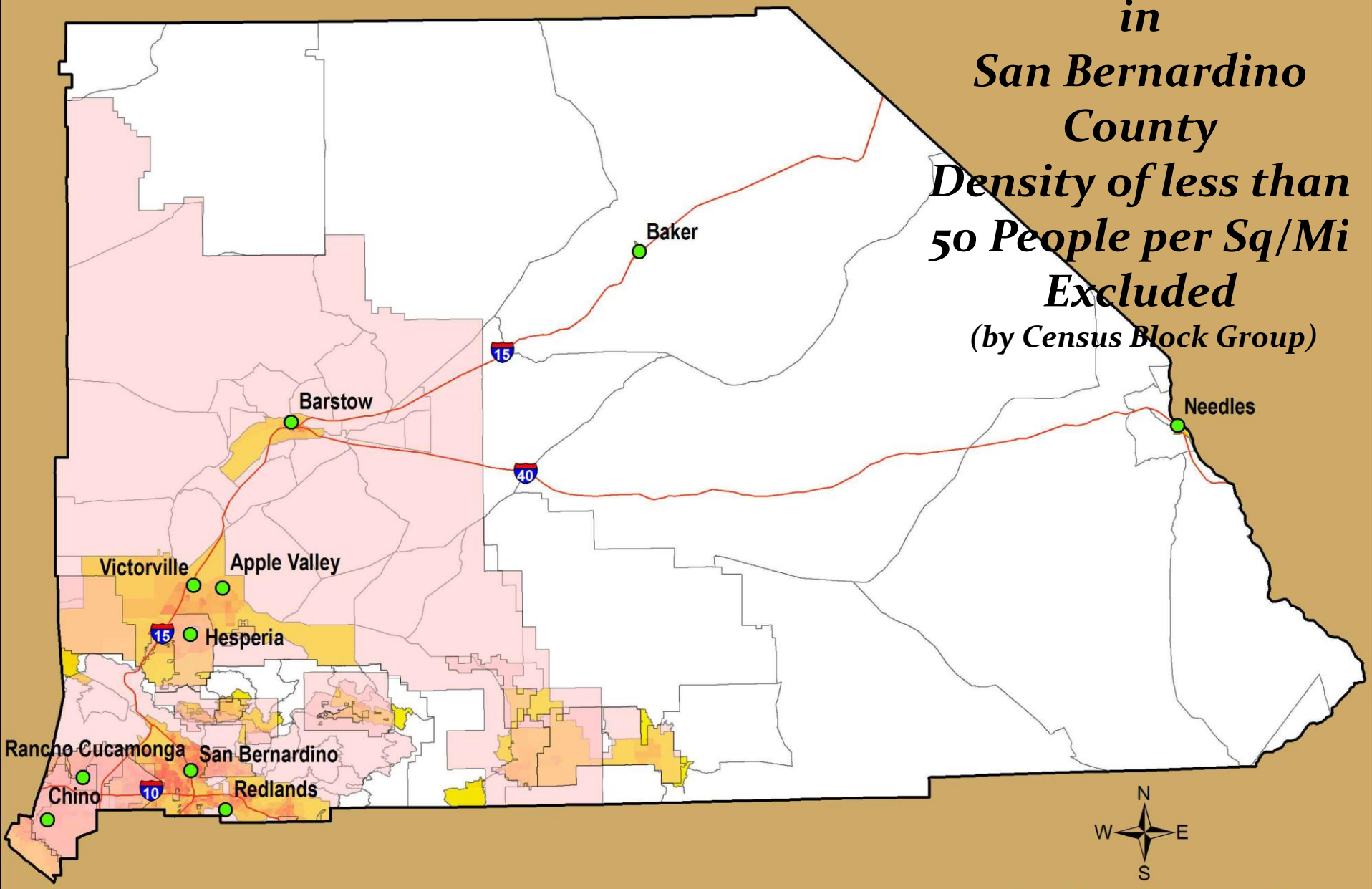

FIGURE 4

Population Centers & Mgmt. Entities in San Bernardino County

(Density of less than 50 People per Sq/Mi Excluded – by Census Block Group)

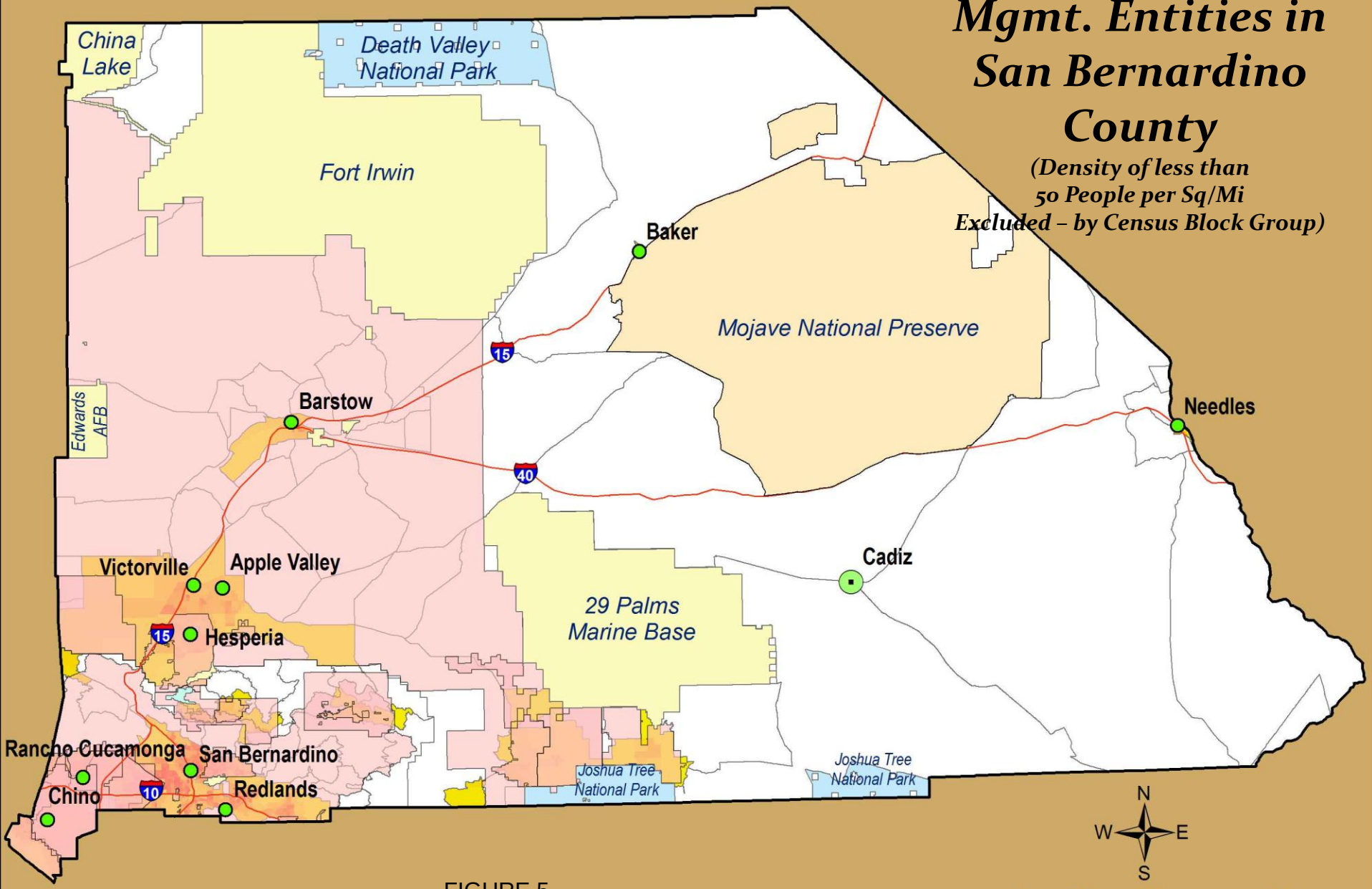

FIGURE 5

Outlying Basins And Management Areas

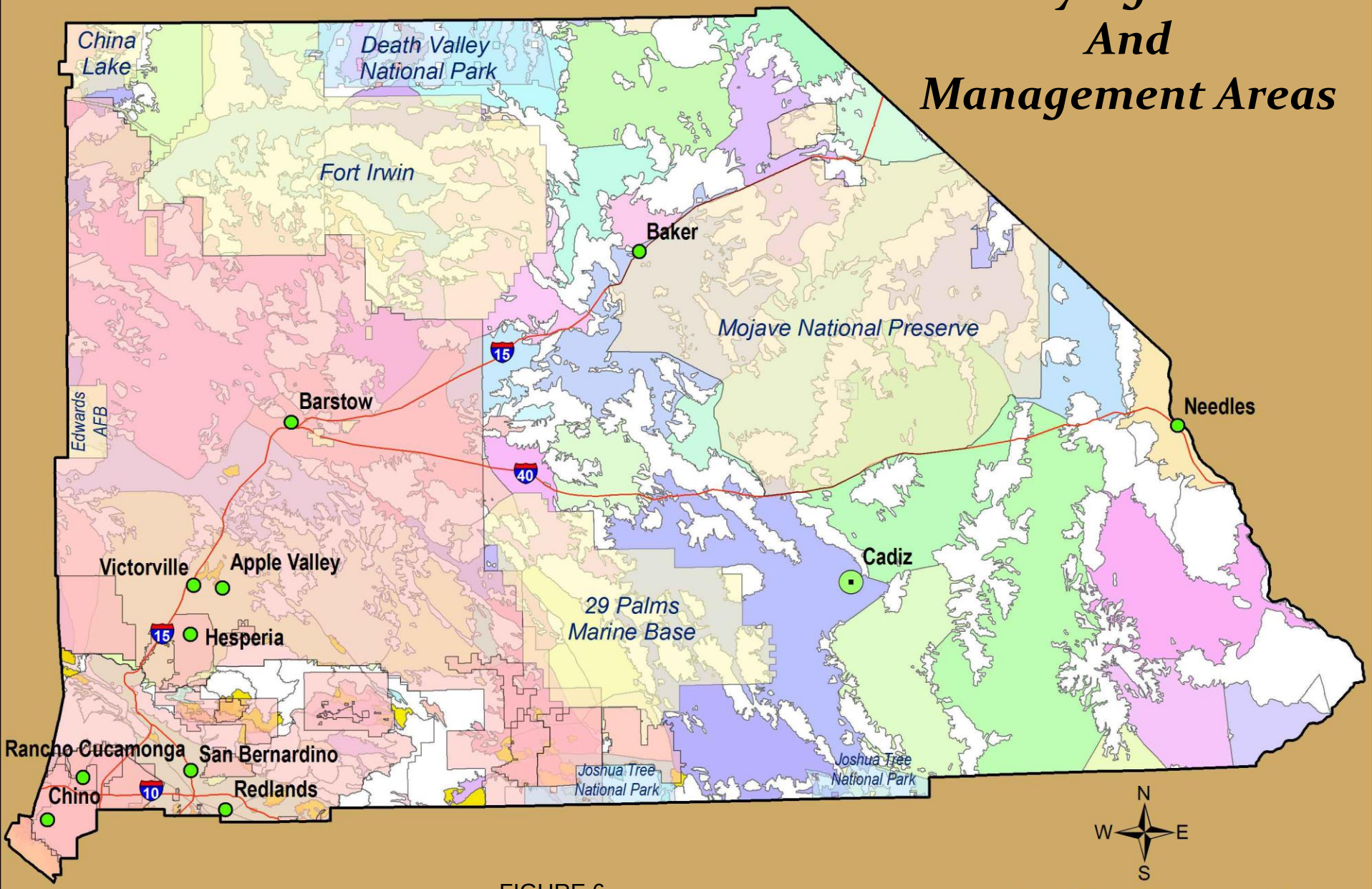

FIGURE 6

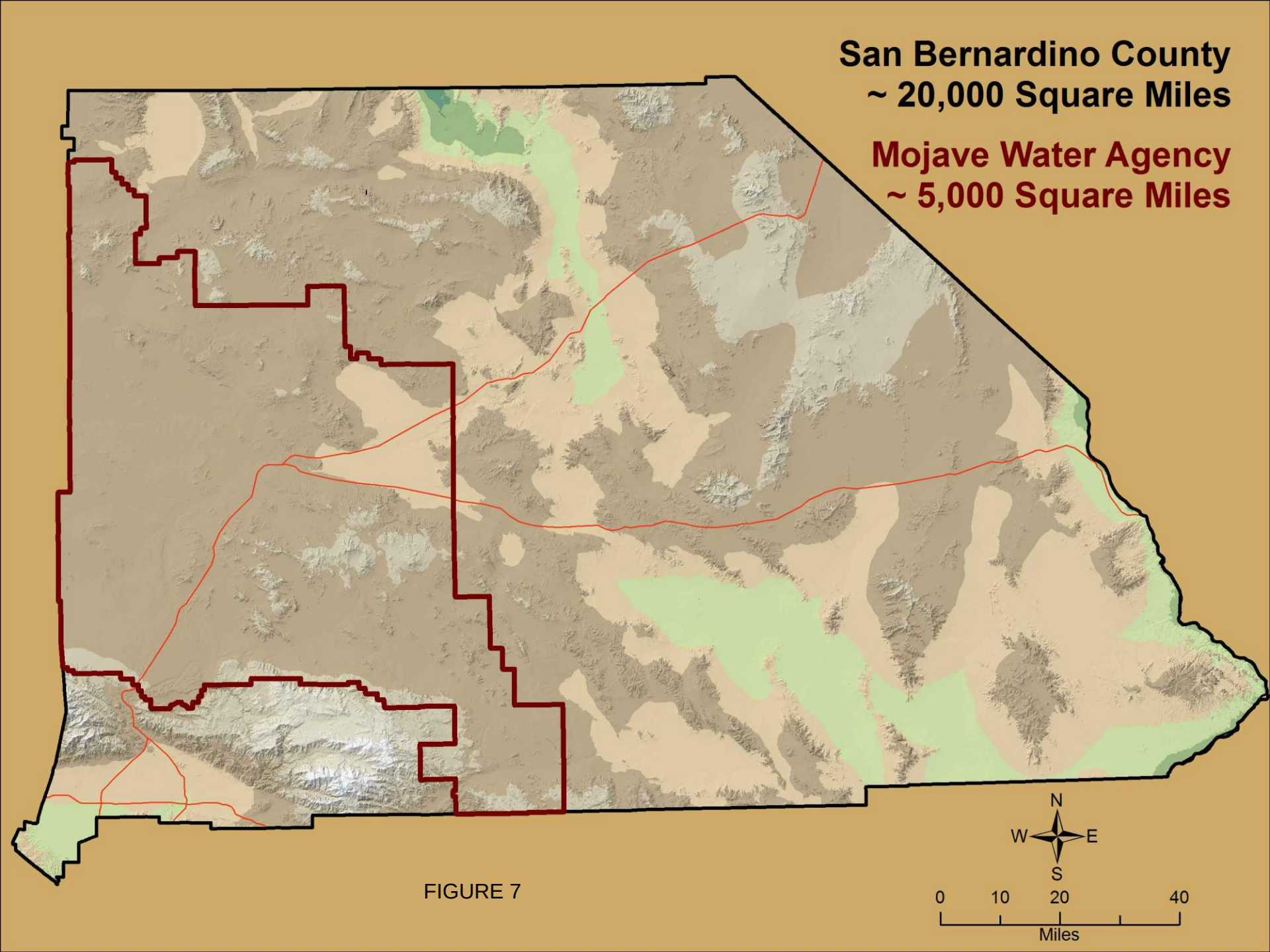
San Bernardino County
~ 20,000 Square Miles
Mojave Water Agency
~ 5,000 Square Miles
N
W
E
S
0
10
20
40
Miles

FIGURE 7

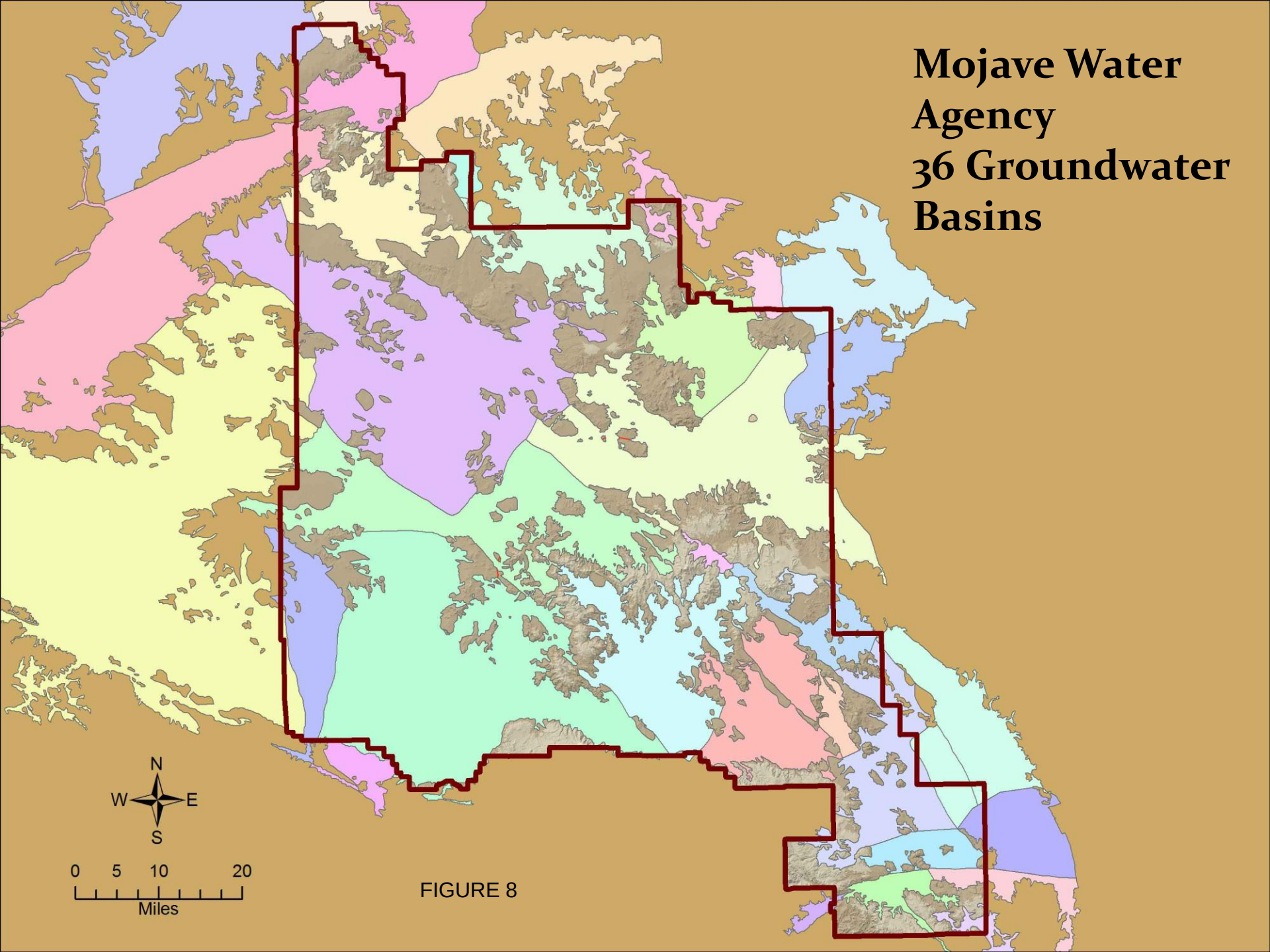
Mojave Water Agency
36 Groundwater Basins
N
W
E
S
0 5 10 20
Miles

FIGURE 8

17 Groundwater Basins Not Monitored by Mojave Water Agency

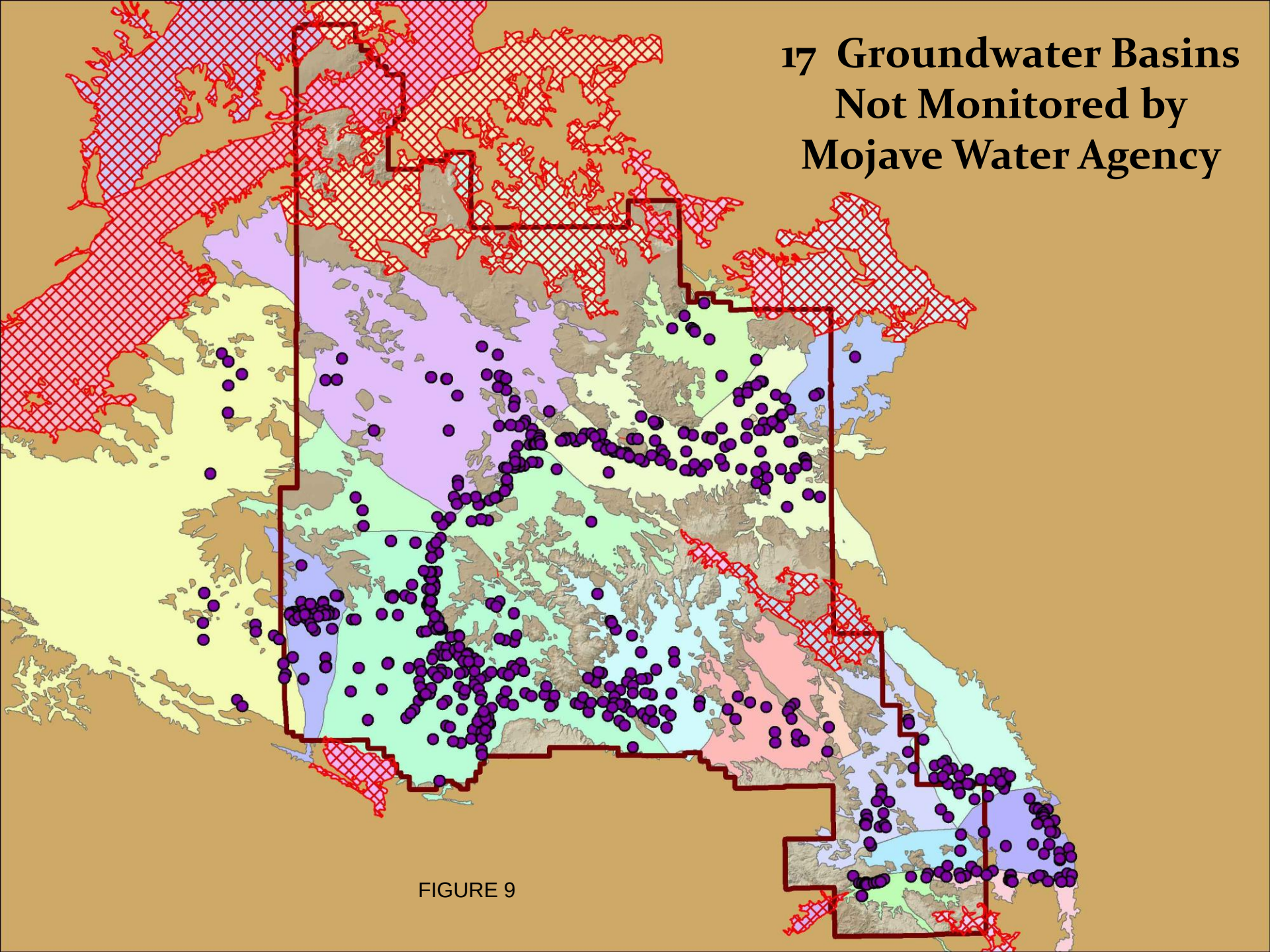

FIGURE 9

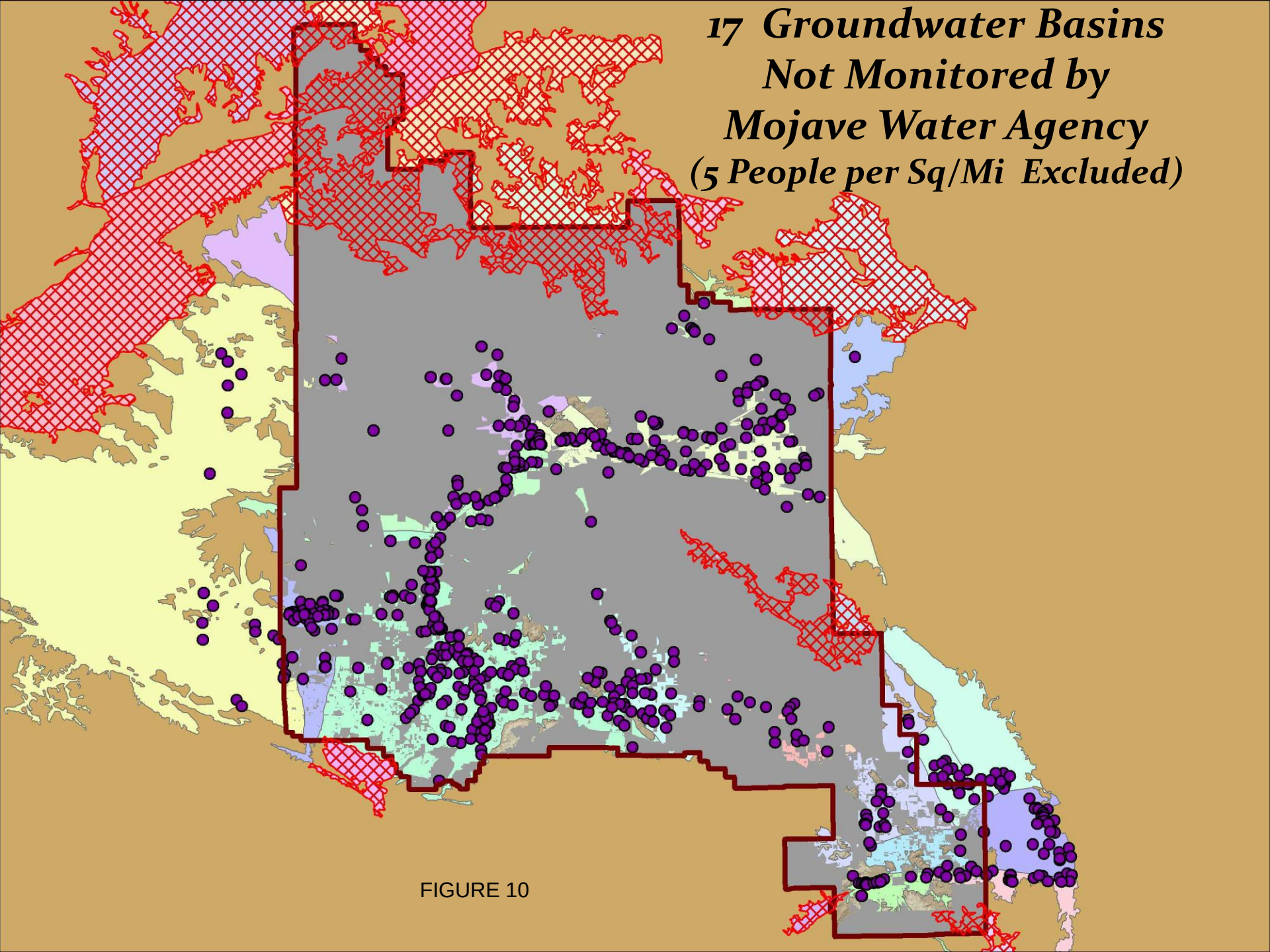
17 Groundwater Basins
Not Monitored by
Mojave Water Agency
(5 People per Sq/Mi Excluded)

FIGURE 10